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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/893,970

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Soon Sung Yoo

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12/16/2003

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EXAMINER

KIELIN, ERIK J

ART UNIT

PAPER NUMBER

2813

DATE MAILED: 12/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/893,970

Applicant(s)

YOO ET AL.

Examiner

Erik Kielin

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 October 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) none is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

This action responds to the Amendment filed 1 October 2003 (Paper no. 10).

Cancellation of claims 9-20 is acknowledged. Claims 1-8 are active.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-3 and 5 are rejected under 35 U.S.C. 102(e) as being anticipated by US 6,239,855 B1 (**Nakahara et al.**).

Regarding claim 1, **Nakahara** discloses a liquid crystal display device (title), comprising:

a first substrate **21** (Fig. 2);

a main seal **14** (called “injection seal” col. 9, line 20) on the first substrate and defining a liquid crystal injection area **14a**;

a first step coverage-compensating layer (called a “functional film in an inner area within the injection seals” col. 4, lines 57-62) disposed between the first substrate and the main seal;

a plurality of dummy seals **22** (Figs. 2 and 11, or alternatively **42** in Fig. 7 or **62** in Fig. 21) on the first substrate **21** and external to the liquid crystal injection area; and

a second step coverage-compensating layer (called a “functional film which is within and outer area outside the liquid crystal injection area” col. 4, lines 57-62) disposed between the

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first substrate and the plurality of dummy seals, the second step coverage-compensating layer having substantially a same thickness as the first step coverage-compensating layer (col. 4, lines 57-62 --especially lines 60-62). (See also col. 5, lines 59-64; col. 6, lines 51-59; col. 6, line 66 to col. 7, line 4; col. 9, lines 20-27; paragraph bridging cols. 9-10 --especially col. 10, lines 8-17.)

Regarding claim 2, the main seal **14** is provided with a liquid crystal injection hole **14a** through which a liquid crystal can be injected.

Regarding claim 3, the main seal **14** and the dummy seals **22** have a same thickness (Fig. 11).

Regarding claim 5, a top of the main seal **14** and tops of the dummy seals **22** are a same distance from the first substrate (Fig. 11).

3. Claim 6 is rejected under 35 U.S.C. 102(e) as being anticipated by **Nakahara** considered with Applicant's admissions of record.

Nakahara teaches that the LCD may be a TFT-driven LCD (col. 15, lines 37-49). Accordingly, it is seen to be inherent that the TFT-driven LCD of **Nakahara** has a gate metal pattern on the substrate forming a gate line and a gate electrode; and a gate-insulating layer covering the gate metal pattern because Applicant teaches that TFT-driven LCDs have these features. (See instant specification pp. 2-4.)

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 4, 7, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Nakahara**.

Regarding claim 4, the prior art of **Nakahara**, as explained above, discloses each of the claimed features except for providing the thickness of the first coverage compensating layer (“functional film”) or specifically that the thickness of about 6500 Å.

It would have been obvious for one of ordinary skill in the art, at the time of the invention to make the first coverage compensating layer thickness about 6500 Å in order to provide a uniform cell gap, in line with the teaching in Nakahara.

Moreover, the thickness is *prima facie* obvious without showing that the claimed ranges achieve unexpected results relative to the prior art range. See *In re Woodruff*, 16 USPQ2d 1935, 1937 (Fed. Cir. 1990). See also *In re Huang*, 40 USPQ2d 1685, 1688 (Fed. Cir. 1996) (claimed ranges of a result effective variable, which do not overlap the prior art ranges, are unpatentable unless they produce a new and unexpected result which is different in kind and not merely in degree from the results of the prior art). See also *In re Boesch*, 205 USPQ 215 (CCPA) (discovery of optimum value of result effective variable in known process is ordinarily within skill of art) and *In re Aller*, 105 USPQ 233 (CCPA 1955) (selection of optimum ranges within prior art general conditions is obvious).

Regarding claim 7, the prior art of **Nakahara**, as explained above, discloses each of the claimed features except for stating that the first and second step coverage-compensating layers include the gate metal pattern and the gate-insulating layer.

However, **Nakahara** teaches that the functional film may be any film performing a function --hence the term "functional film"-- and has a thickness that may affect the height difference between the main (injection) seal (paragraph bridging cols. 9-10). **Nakahara** also teaches that the dummy seals and that such films include, *inter alia*, "ITO, an inorganic film, an insulative film, an alignment film, a protective layer, or the like" (col. 10, lines 14-16).

It would have been obvious for one of ordinary skill in the art, at the time of the invention to make the first and second step coverage-compensating layers include the gate metal pattern and the gate-insulating layer in **Nakahara** because **Nakahara** teaches that the film should be functional, such as a gate metal pattern and a gate-insulating film, and that any thin film having a thickness should be included underneath **both** the main (injection) seal and the dummy seal in order to maintain uniform cell gap.

Regarding claim 8, the prior art of **Nakahara**, as explained above, discloses each of the claimed features except for stating that the main seal and the dummy seals are formed on the gate-insulating layer.

As noted above, **Nakahara** teaches that the main (injection) seal and the dummy seal should be formed on the same step coverage-compensating film (i.e. "functional film") in order to maintain uniform cell gap (col. 5, lines 59-64; col. 6, lines 52-59; paragraph bridging cols. 9-10).

It would have been obvious for one of ordinary skill in the art, at the time of the invention to form the main and dummy seals of **Nakahara** on the gate insulating layer because **Nakahara** teaches that the functional film in both the main seal and dummy seal areas is the same material layer and the same thickness in order to prevent height differences between the main and dummy seals, thereby maintaining uniform liquid crystal cell gaps.

Response to Arguments

6. Applicant's arguments filed 1 October 2003 have been fully considered but they are not persuasive.

Applicant argues that Nakahara does not teach the first and second step coverage compensating layers. Examiner respectfully disagrees for reasons already presented in the rejection which are incorporated herein in their entirety. Nakahara states in pertinent part,

“Functional films (thin films) other than the color filter may also be formed on the substrate. Any influence of the provided functional film on the cell gap can be avoided by **forming the dummy seal only on a portion of the functional film which is within an outer area outside the injection seals.**” (See col. 5, lines 59-64; emphasis added.)

“In a preferred embodiment, a functional film is provided on at least one of the pair of substrates. More preferably, the dummy seal is formed only on a portion of the functional film which is within an outer area outside the injection seals, and **the thickness of the functional film provided in the outer area is substantially the same as that of the functional film in an inner area within the injection seals.** Thus, it is possible to **provide a uniform cell gap regardless of the thickness of the functional film.** Preferably, the functional film comprises a color filter. The color filter has a thickness of about 1 to 2 μm , which is greater than those of other functional films, thereby providing an even more uniform cell gap.” (See col. 6, lines 52-62; emphasis added.)

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Accordingly, Nakahara expressly teaches the step coverage compensating layer. Applicant is reminded that Nakahara is not required to use Applicant's terminology. So long as the feature performs the function, it does not matter what it is called.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (e.g., (1) the **implied** "step" in the step coverage compensation layer, (2) the lack of continuity of the step coverage compensating layer) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Moreover, Nakahara discloses Applicant's concept in its entirety of compensating for differences in cell gap differences by incorporating the functional films into the overall thickness of layers associated with the seals. Accordingly, the instant claims are not enforceable over the Nakahara patent since the concept is already disclosed in Nakahara.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Each of JP 07-020478 (**Toru** et al.), JP 10-123539 (**Koichi**), and 09-123210 (**Satoru** et al.) teaches the use of height-adjustment compensating layers to make the main and dummy seals have equal heights. (See the Abstract and Figs. in each reference.)

US 5,621,553 (Nishiguchi et al.) teaches main 21 and dummy 22 seals (Fig. 3D) formed over equivalent height adjustment layers.

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US 6,072,556 and US 6,239,854 B1 (each to Hirakata et al.) each teaches the use of adjustment layers to provide uniform height in the sealing region (Abstract, figures).

US 6,373,544 B1 (Hirabayashi et al.) teaches the use of adjustment layers to provide uniform height in the sealing region (Abstract, figures).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erik Kielin whose telephone number is 703-306-5980. The examiner can normally be reached on 9:00 - 19:30 on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr., can be reached at 703-308-4940. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.


Erik Kielin
Primary Examiner
December 13, 2003